FIG. 1

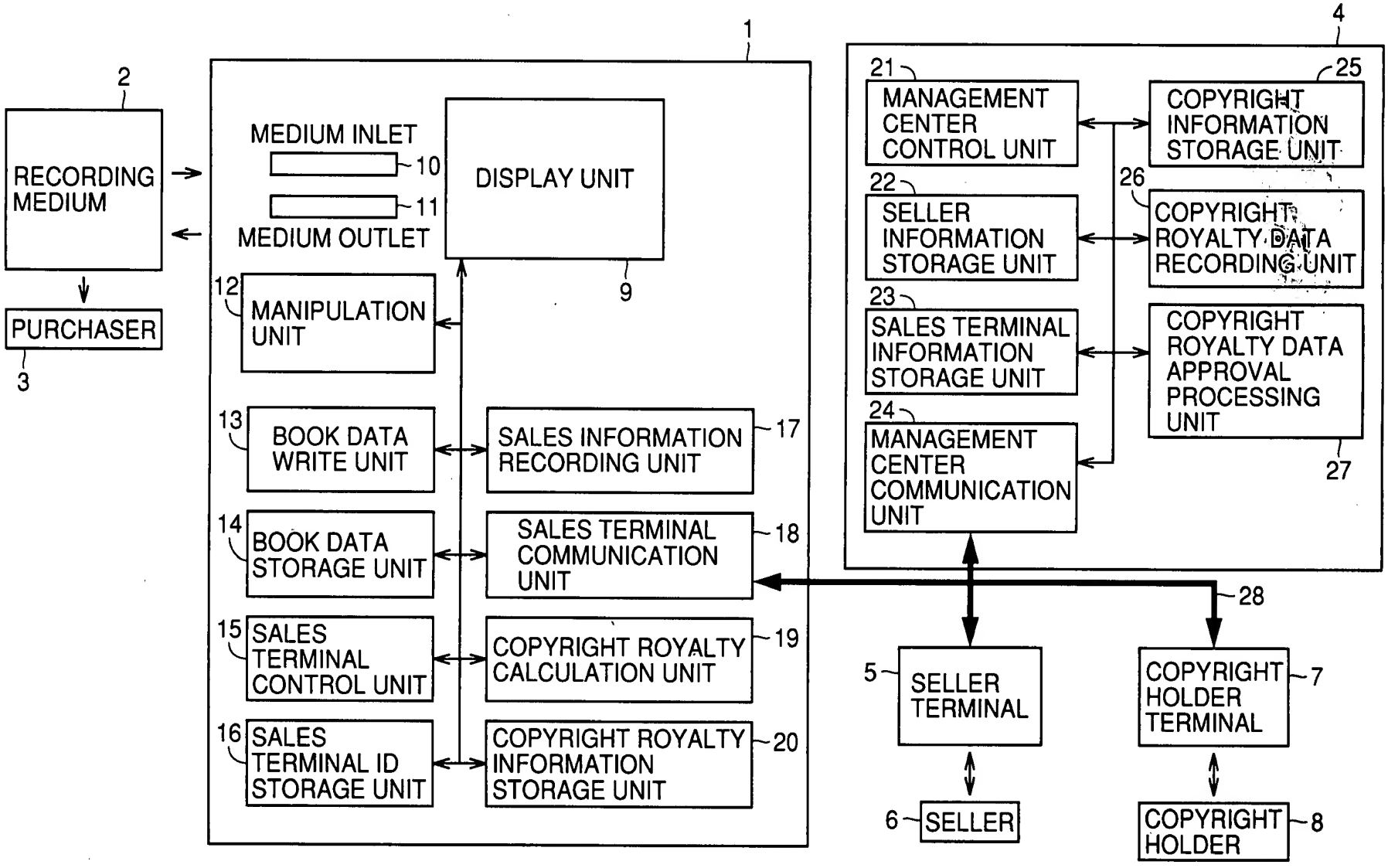

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FIG.2

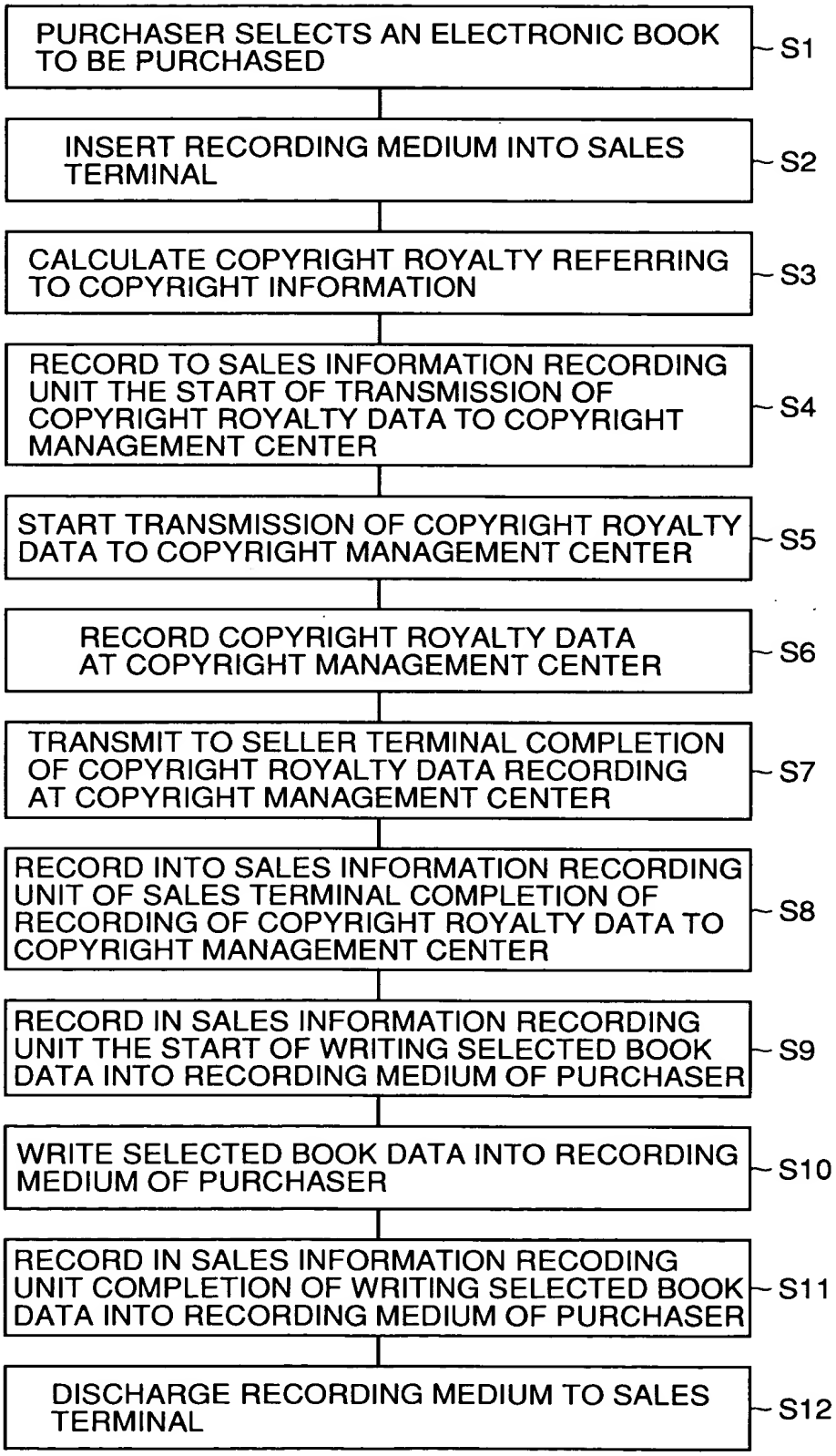

PURCHASER SELECTS AN ELECTRONIC BOOK TO BE PURCHASED
S1
INSERT RECORDING MEDIUM INTO SALES TERMINAL
S2
CALCULATE COPYRIGHT ROYALTY REFERRING TO COPYRIGHT INFORMATION
S3
RECORD TO SALES INFORMATION RECORDING UNIT THE START OF TRANSMISSION OF COPYRIGHT ROYALTY DATA TO COPYRIGHT MANAGEMENT CENTER
S4
START TRANSMISSION OF COPYRIGHT ROYALTY DATA TO COPYRIGHT MANAGEMENT CENTER
S5
RECORD COPYRIGHT ROYALTY DATA AT COPYRIGHT MANAGEMENT CENTER
S6
TRANSMIT TO SELLER TERMINAL COMPLETION OF COPYRIGHT ROYALTY DATA RECORDING AT COPYRIGHT MANAGEMENT CENTER
S7
RECORD INTO SALES INFORMATION RECORDING UNIT OF SALES TERMINAL COMPLETION OF RECORDING OF COPYRIGHT ROYALTY DATA TO COPYRIGHT MANAGEMENT CENTER
S8
RECORD IN SALES INFORMATION RECORDING UNIT THE START OF WRITING SELECTED BOOK DATA INTO RECORDING MEDIUM OF PURCHASER
S9
WRITE SELECTED BOOK DATA INTO RECORDING MEDIUM OF PURCHASER
S10
RECORD IN SALES INFORMATION RECODING UNIT COMPLETION OF WRITING SELECTED BOOK DATA INTO RECORDING MEDIUM OF PURCHASER
S11
DISCHARGE RECORDING MEDIUM TO SALES TERMINAL
S12

FIG.3A

BOOK 1-ID
DOCUMENT INFORMATION 1
COPYRIGHT HOLDER A-ID
COPYRIGHT ROYALTY INFORMATION A1
BOOK DATA A1

FIG.3B

BOOK 2-ID
DOCUMENT INFORMATION 2
COPYRIGHT HOLDER A-ID
COPYRIGHT ROYALTY INFORMATION A2
BOOK DATA A2
COPYRIGHT HOLDER B-ID
COPYRIGHT ROYALTY INFORMATION B2
BOOK DATA B2
:

FIG.3C

BOOK 3-ID
DOCUMENT INFORMATION 3
COPYRIGHT HOLDER A-ID
COPYRIGHT ROYALTY INFORMATION A3a
BOOK DATA A3a
COPYRIGHT HOLDER A-ID
COPYRIGHT ROYALTY INFORMATION A3b
BOOK DATA A3b
:

FIG.4

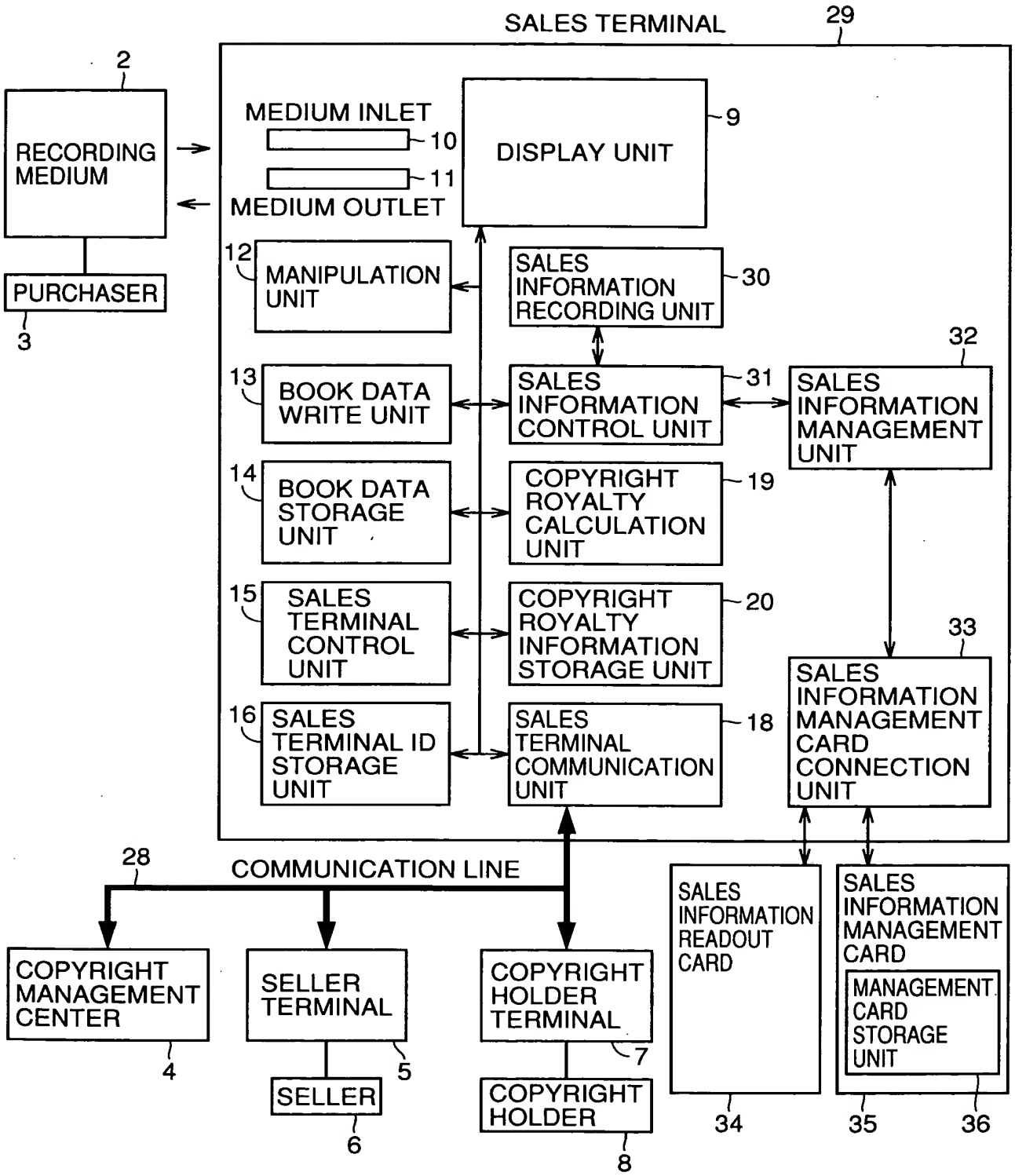

SALES TERMINAL
29
2
RECORDING MEDIUM
PURCHASER
3
MEDIUM INLET
10
11
MEDIUM OUTLET
DISPLAY UNIT
9
12
MANIPULATION UNIT
SALES INFORMATION RECORDING UNIT
30
32
13
BOOK DATA WRITE UNIT
SALES INFORMATION CONTROL UNIT
31
SALES INFORMATION MANAGEMENT UNIT
14
BOOK DATA STORAGE UNIT
COPYRIGHT ROYALTY CALCULATION UNIT
19
15
SALES TERMINAL CONTROL UNIT
COPYRIGHT ROYALTY INFORMATION STORAGE UNIT
20
33
16
SALES TERMINAL ID STORAGE UNIT
SALES TERMINAL COMMUNICATION UNIT
18
SALES INFORMATION MANAGEMENT CARD CONNECTION UNIT
28
COMMUNICATION LINE
COPYRIGHT MANAGEMENT CENTER
4
SELLER TERMINAL
5
SELLER
6
COPYRIGHT HOLDER TERMINAL
7
COPYRIGHT HOLDER
8
SALES INFORMATION READOUT CARD
34
SALES INFORMATION MANAGEMENT CARD
MANAGEMENT CARD STORAGE UNIT
35
36

FIG.5

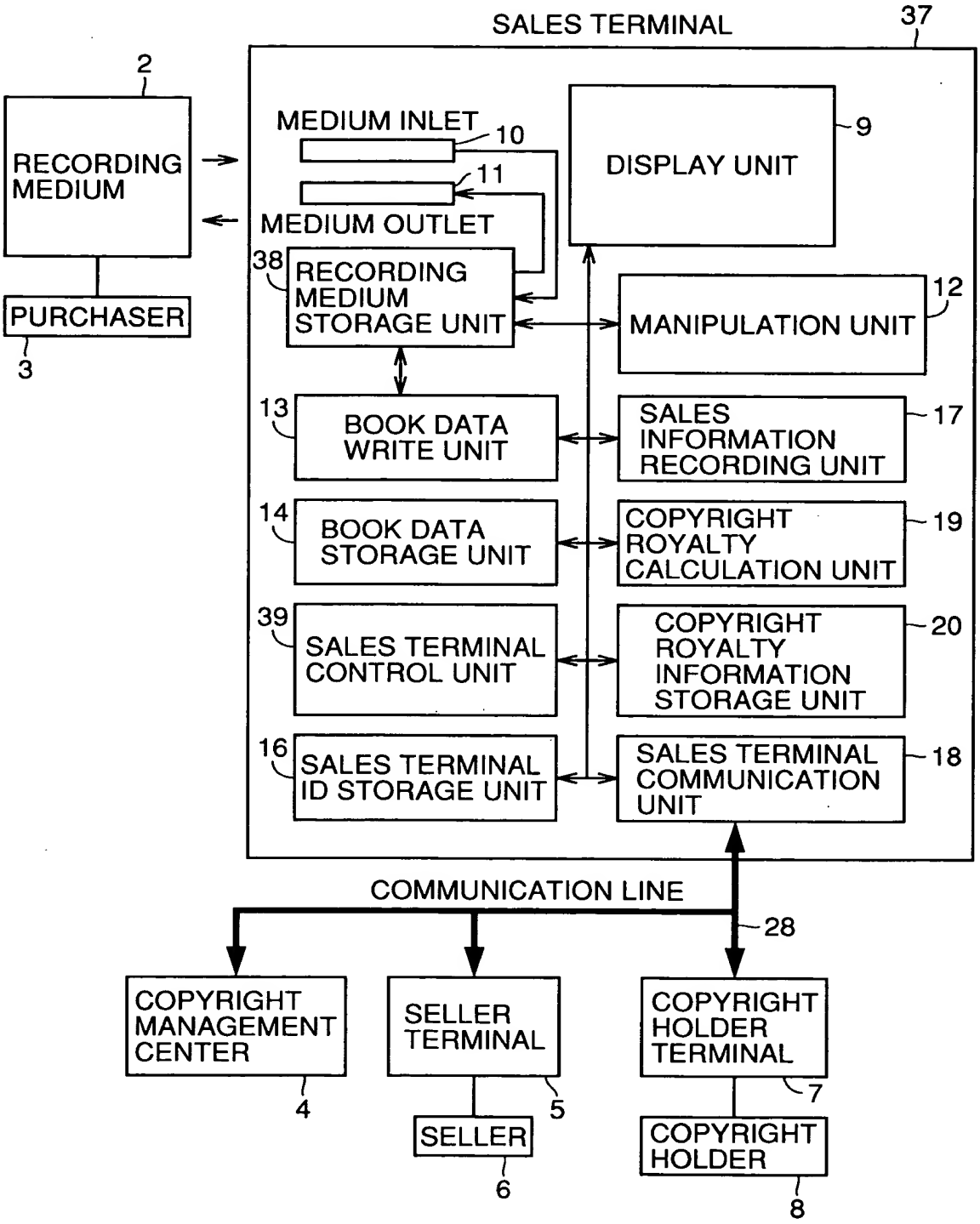
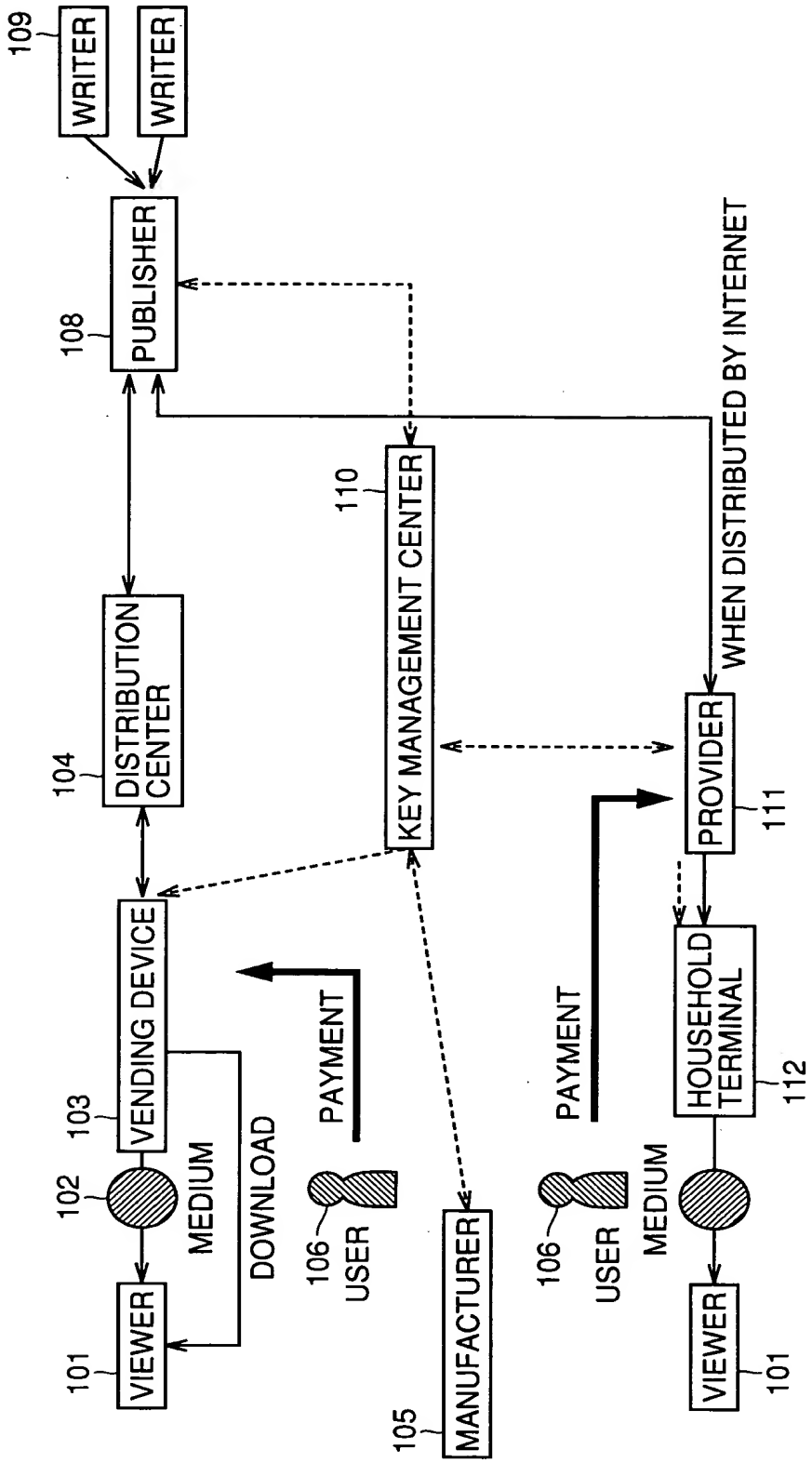

SALES TERMINAL
37
2
RECORDING MEDIUM
PURCHASER
3
MEDIUM INLET
10
11
MEDIUM OUTLET
38
RECORDING MEDIUM STORAGE UNIT
DISPLAY UNIT
9
MANIPULATION UNIT
12
13
BOOK DATA WRITE UNIT
SALES INFORMATION RECORDING UNIT
17
14
BOOK DATA STORAGE UNIT
COPYRIGHT ROYALTY CALCULATION UNIT
19
39
SALES TERMINAL CONTROL UNIT
COPYRIGHT ROYALTY INFORMATION STORAGE UNIT
20
16
SALES TERMINAL ID STORAGE UNIT
SALES TERMINAL COMMUNICATION UNIT
18
COMMUNICATION LINE
28
COPYRIGHT MANAGEMENT CENTER
4
SELLER TERMINAL
5
SELLER
6
COPYRIGHT HOLDER TERMINAL
7
COPYRIGHT HOLDER
8

FIG.6


109
WRITER
WRITER
108
PUBLISHER
110
KEY MANAGEMENT CENTER
WHEN DISTRIBUTED BY INTERNET
104
DISTRIBUTION CENTER
PROVIDER
111
103
VENDING DEVICE
PAYMENT
PAYMENT
HOUSEHOLD TERMINAL
112
102
MEDIUM
DOWNLOAD
106
USER
106
USER
MEDIUM
105
MANUFACTURER
101
VIEWER
VIEWER
101

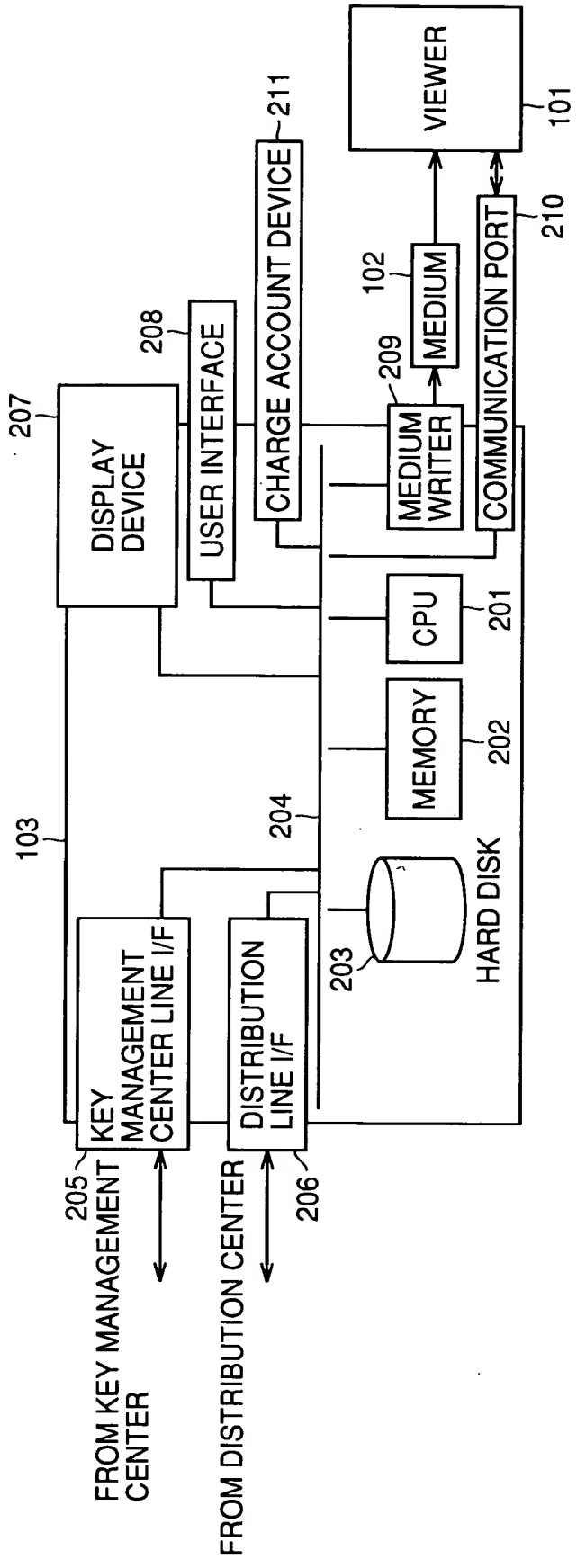

VIEWER
101
CHARGE ACCOUNT DEVICE
211
USER INTERFACE
208
DISPLAY DEVICE
207
MEDIUM
102
MEDIUM WRITER
209
COMMUNICATION PORT
210
CPU
201
MEMORY
202
HARD DISK
203
204
103
KEY MANAGEMENT CENTER LINE I/F
205
DISTRIBUTION LINE I/F
206
FROM KEY MANAGEMENT CENTER
FROM DISTRIBUTION CENTER

FIG.7

FIG.8

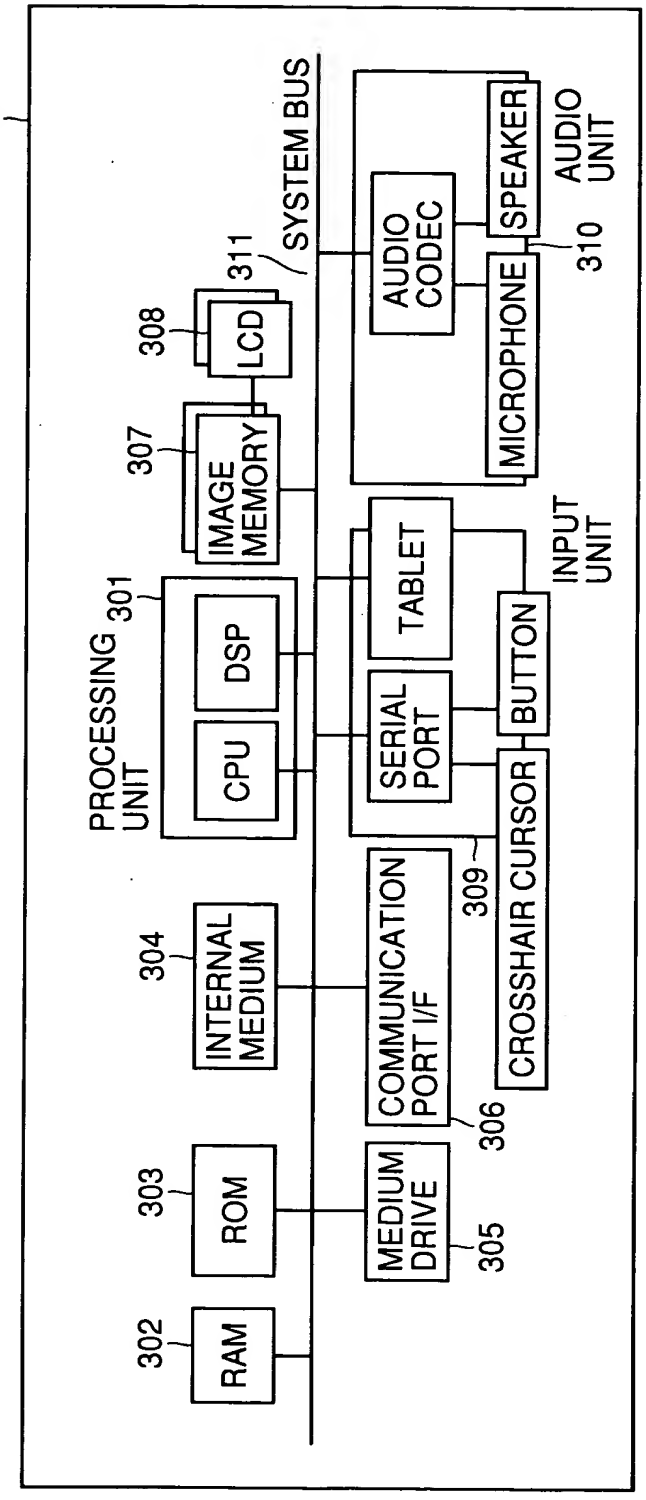

101
SYSTEM BUS
PROCESSING UNIT
301
CPU
DSP
302
RAM
303
ROM
304
INTERNAL MEDIUM
305
MEDIUM DRIVE
306
COMMUNICATION PORT I/F
307
IMAGE MEMORY
308
LCD
309
SERIAL PORT
TABLET
CROSSHAIR CURSOR
BUTTON
INPUT UNIT
AUDIO CODEC
MICROPHONE
SPEAKER
310
AUDIO UNIT
311

FIG.9

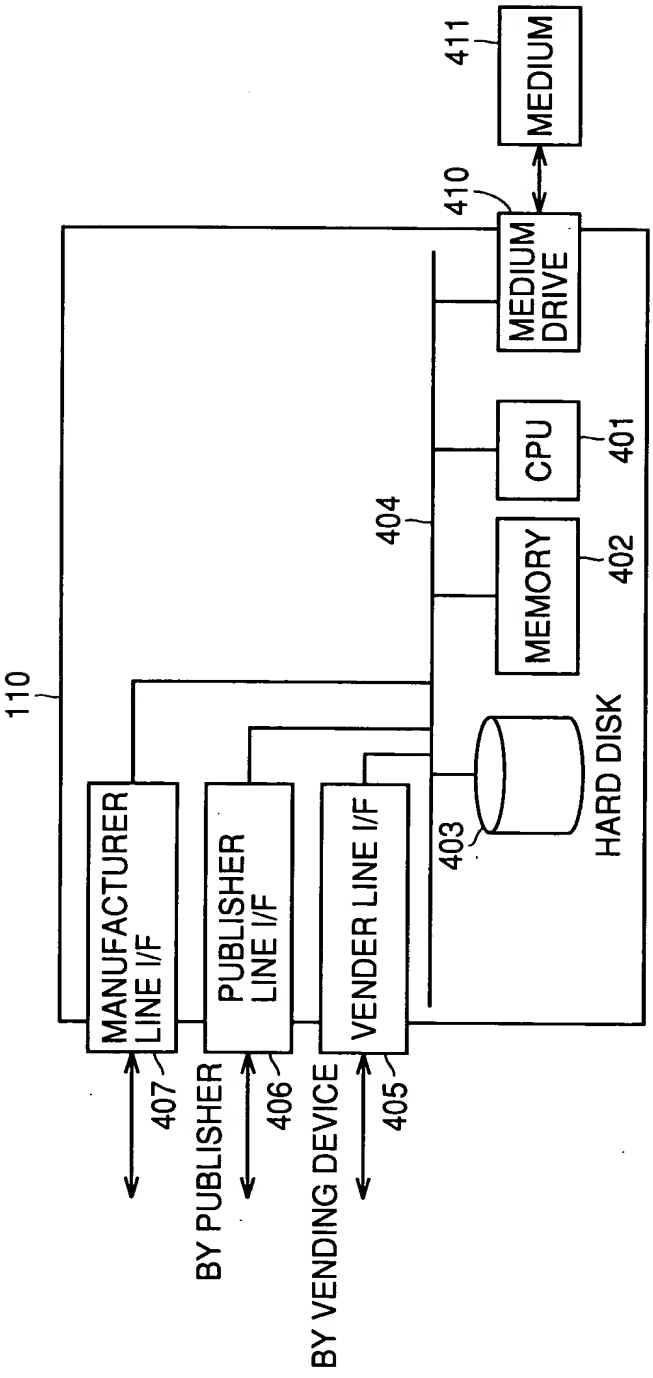

110
MANUFACTURER LINE I/F
PUBLISHER LINE I/F
VENDER LINE I/F
407
406
405
BY PUBLISHER
BY VENDING DEVICE
403
HARD DISK
404
MEMORY
402
CPU
401
MEDIUM DRIVE
410
411
MEDIUM

FIG.10

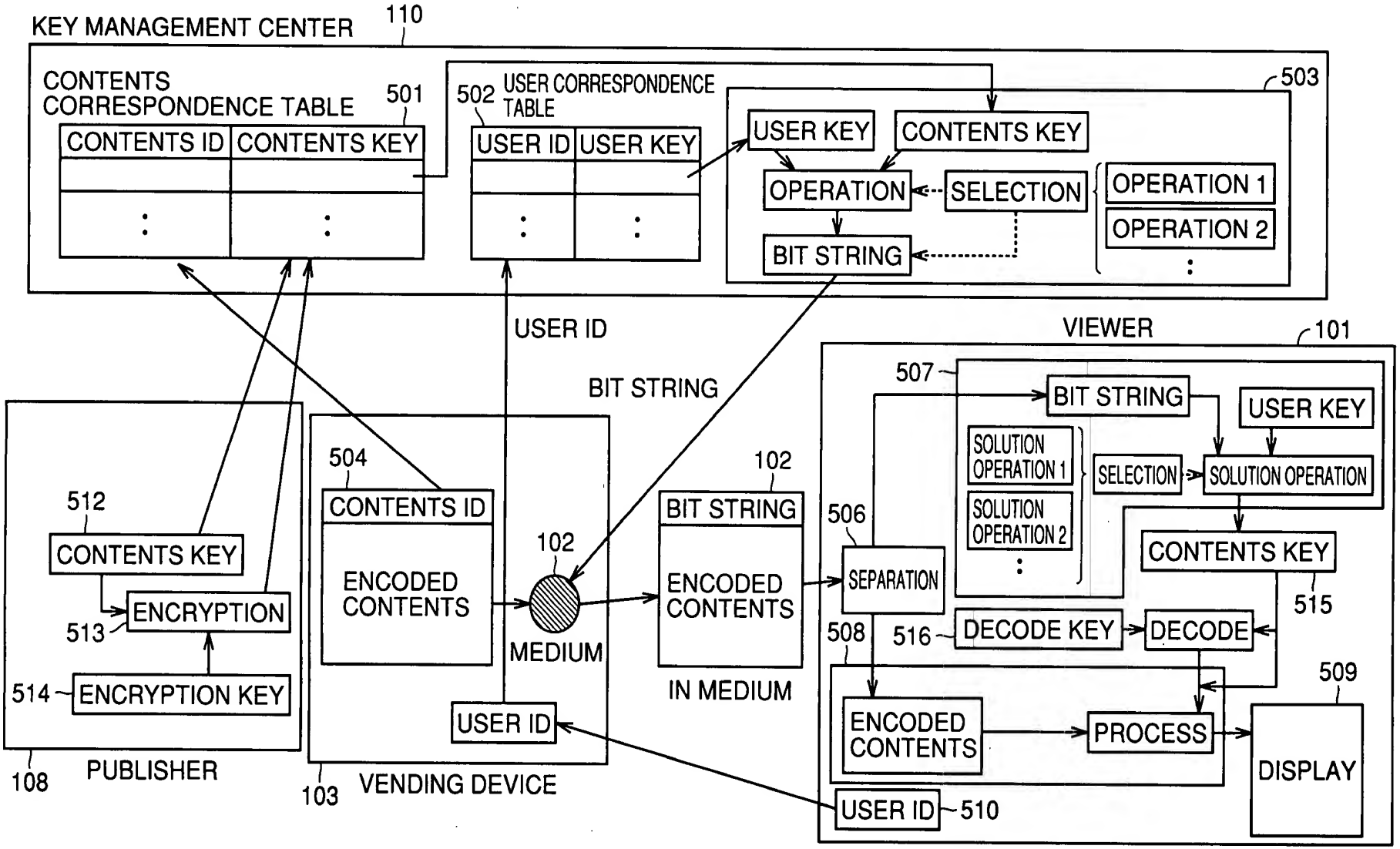

KEY MANAGEMENT CENTER
110
CONTENTS CORRESPONDENCE TABLE
501
CONTENTS ID
CONTENTS KEY
502
USER CORRESPONDENCE TABLE
USER ID
USER KEY
503
USER KEY
CONTENTS KEY
OPERATION
SELECTION
OPERATION 1
OPERATION 2
BIT STRING
USER ID
BIT STRING
VIEWER
101
507
BIT STRING
USER KEY
SOLUTION OPERATION 1
SOLUTION OPERATION 2
SELECTION
SOLUTION OPERATION
CONTENTS KEY
515
506
SEPARATION
516
DECODE KEY
DECODE
508
509
ENCODED CONTENTS
PROCESS
DISPLAY
USER ID
510
512
CONTENTS KEY
ENCRYPTION
513
514
ENCRYPTION KEY
PUBLISHER
108
504
CONTENTS ID
ENCODED CONTENTS
102
MEDIUM
USER ID
VENDING DEVICE
103
102
BIT STRING
ENCODED CONTENTS
IN MEDIUM

FIG.11

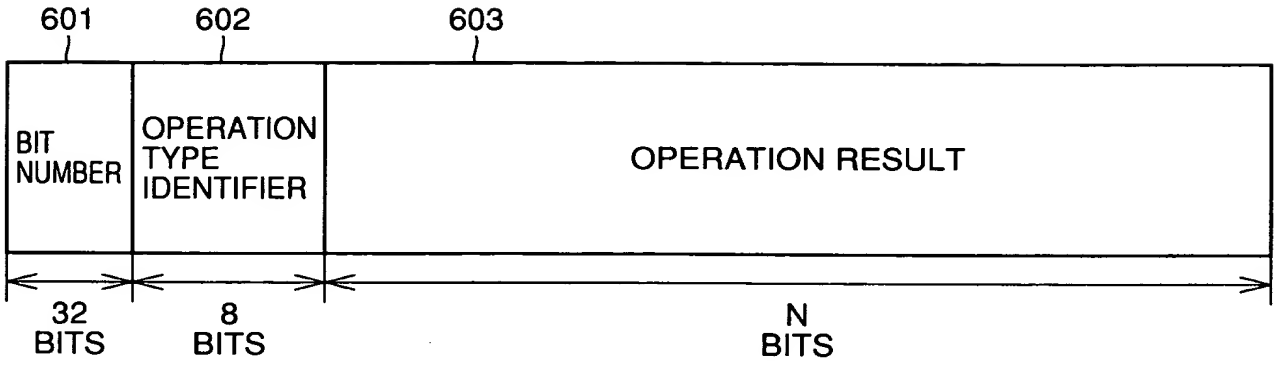
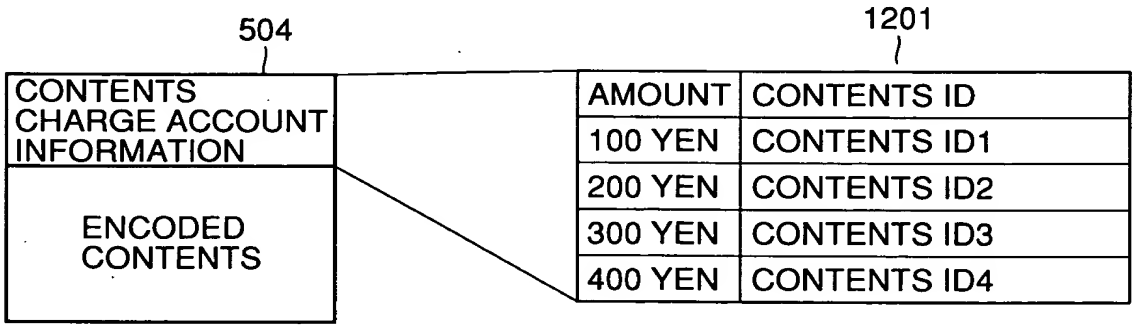

601
602
603
BIT NUMBER
OPERATION TYPE IDENTIFIER
OPERATION RESULT
32 BITS
8 BITS
N BITS

FIG.12


504
1201
CONTENTS CHARGE ACCOUNT INFORMATION
ENCODED CONTENTS
AMOUNT
CONTENTS ID
100 YEN
CONTENTS ID1
200 YEN
CONTENTS ID2
300 YEN
CONTENTS ID3
400 YEN
CONTENTS ID4

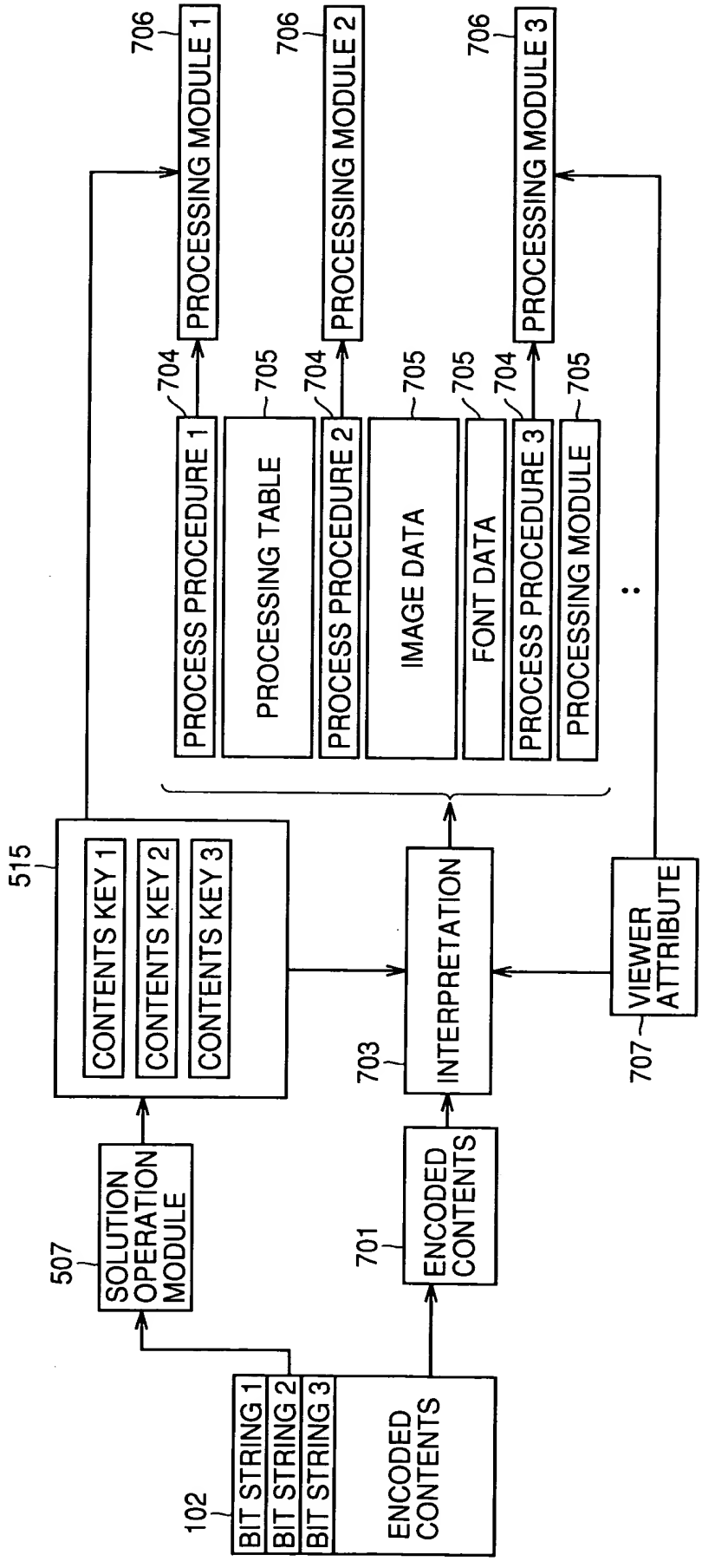

102
BIT STRING 1
BIT STRING 2
BIT STRING 3
ENCODED CONTENTS
507
SOLUTION OPERATION MODULE
701
ENCODED CONTENTS
703
INTERPRETATION
707
VIEWER ATTRIBUTE
515
CONTENTS KEY 1
CONTENTS KEY 2
CONTENTS KEY 3
704
PROCESS PROCEDURE 1
705
PROCESSING TABLE
704
PROCESS PROCEDURE 2
705
IMAGE DATA
705
FONT DATA
704
PROCESS PROCEDURE 3
705
PROCESSING MODULE
706
PROCESSING MODULE 1
706
PROCESSING MODULE 2
706
PROCESSING MODULE 3

FIG.13

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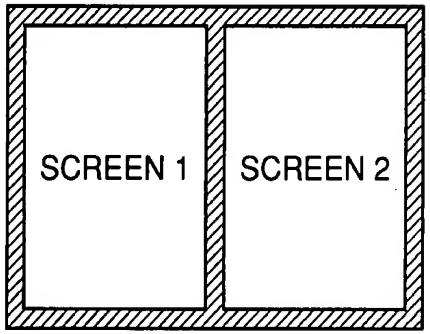
FIG.14A



768X1024 PIXELS
MONOCHROME 8 TONES
USE 2 LCD PANELS

FIG.14B

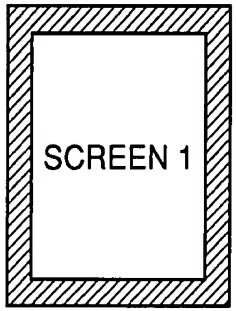
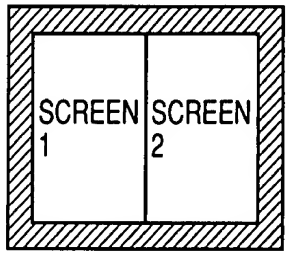
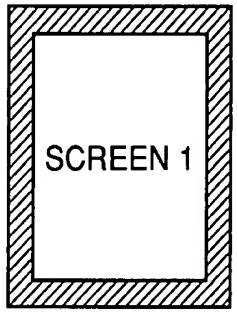


FIG.14C



768X1024 PIXELS
MONOCHROME 8 TONES
USE 1 LCD PANEL

FIG.14D



480X640 PIXELS
260,000 COLORS
USE 1 LCD PANEL

FIG. 15

DISPLAY FORMAT	NUMBER OF LCDs	LCD NUMBER OF PIXELS (XXY)	LCD COLOR	DISPLAYED DIRECTION	NUMBER OF PAGES
(a)	2	768×1024	MONOCHROME 8 TONES	VERTICAL	1
(b)	1	768×1024	MONOCHROME 8 TONES	VERTICAL	1
(c)	1	768×1024	MONOCHROME 8 TONES	HORIZONTAL	2
(d)	1	480×640	260,000 COLORS	VERTICAL	1

FIG. 16

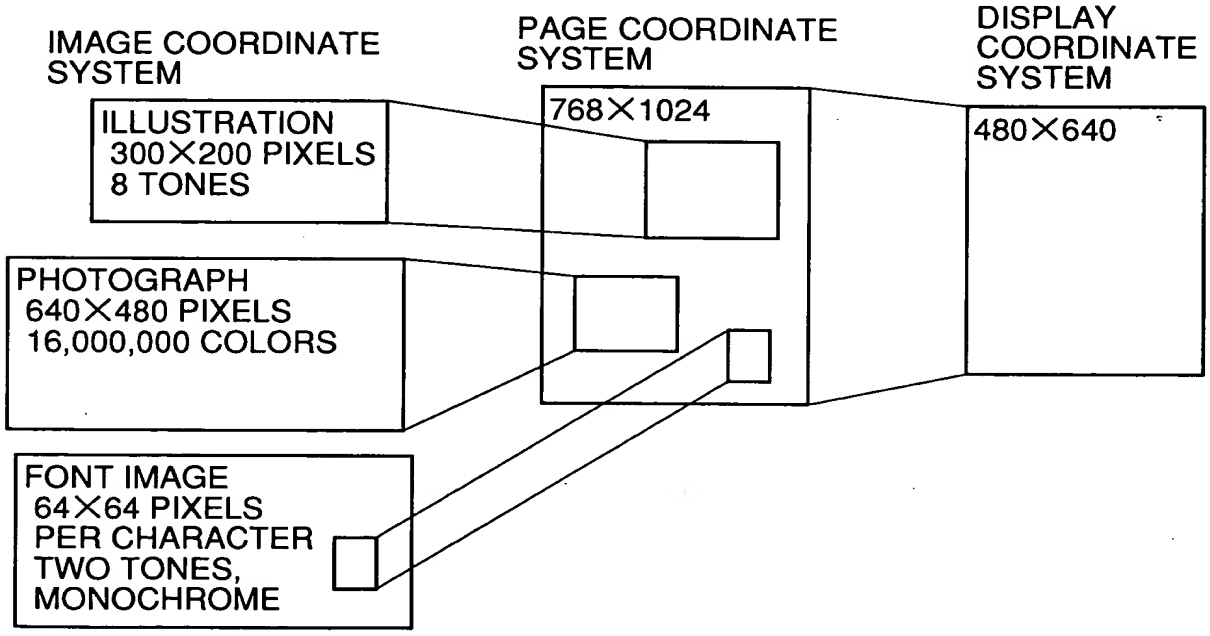


FIG.17

IMAGE	IMAGE DATA STARTING DELIMITER	1002	
1	IMAGE DATA ID NUMBER	1003	
MH	COMPRESSION METHOD IDENTIFIER OF IMAGE DATA	1004	
CONTENTS KEY 1	CONTENTS KEY TYPE USED FOR PROCESS	1005	STEP 1
NONE	PROCESSING TABLE ID TO BE USED	1006	
ENCODED IMAGE DATA	COMPRESSED IMAGE DATA	1007	
/IMAGE	IMAGE DATA ENDING DELIMITER	1008	
TABLE	PROCESSING TABLE STARTING DELIMITER	1009	
1	TABLE ID NUMBER		
CONTENTS KEY 2	KEY TYPE TO DECODE TABLE DATA		STEP 2
TABLE DATA			
/TABLE	PROCESSING TABLE ENDING DELIMITER		
MODULE	MODULE PROCESSING STARTING DELIMITER		
CAOS	MODULE NAME		
CONTENTS KEY 3	KEY TYPE TO DECODE MODULE DATA		STEP 3
ENCODE PROCESS MODULE			
/MODULE	MODULE PROCESS ENDING DELIMITER		
PAGE	PAGE STARTING DELIMITER		
768	PAGE WIDTH IN PIXELS		STEP 4
1024	PAGE HEIGHT IN PIXELS		
IMAGE	IMAGE DATA STARTING DELIMITER		
2	IMAGE DATA ID NUMBER		
JBIG	COMPRESSION METHOD IDENTIFIER OF IMAGE DATA		
768×1024	NUMBER OF DISPLAYABLE PIXELS (x×y)		STEP 5
CONTENTS KEY 2	CONTENTS KEY TYPE USED IN PROCESS		
IMAGE DATA			
/IMAGE	IMAGE DATA ENDING DELIMITER		
IMAGE	IMAGE DATA STARTING DELIMITER		
2	IMAGE DATA ID NUMBER		
JBIG	COMPRESSION METHOD IDENTIFIER OF IMAGE DATA		
480×640	NUMBER OF DISPLAYABLE PIXELS (x×y)		STEP 6
CONTENTS KEY 2	CONTENTS KEY TYPE USED IN PROCESS		
ENCODED IMAGE DATA			
/IMAGE	IMAGE DATA ENDING DELIMITER		
IMAGE	IMAGE DATA STARTING DELIMITER		
3	IMAGE DATA ID NUMBER		
JPEG	COMPRESSION METHOD IDENTIFIER OF IMAGE DATA		
CONTENTS KEY 3	CONTENTS KEY TYPE USED IN PROCESS		STEP 7
ENCODED IMAGE DATA			
/IMAGE	IMAGE DATA ENDING DELIMITER		

FIG. 18

PUTIMAGE	IMAGE DRAW PROCESS STARTING DELIMITER	
1	IMAGE DATA ID	
1	ID NUMBER OF TABLE TO BE USED	
1	ID NUMBER OF TABLE INTERNAL PROCESS	
CONTENTS KEY 2		
0	SOURCE X COORDINATE Xso	
0	SOURCE Y COORDINATE Yso	STEP 8
100	SOURCE RECTANGLE WIDTH IN PIXELS DXs	
100	SOURCE RECTANGLE HEIGHT IN PIXELS DYs	
120	DESTINATION X COORDINATE Xdo	
150	DESTINATION Y COORDINATE Ydo	
100	DESTINATION RECTANGLE WIDTH IN PIXELS DXd	
100	DESTINATION RECTANGLE HEIGHT IN PIXELS DYd	
/PUTIMAGE	IMAGE DRAW PROCESS ENDING DELIMITER	
BLUR	IMAGE BLUR PROCESS STARTING DELIMITER	
3	IMAGE DATA ID	
CONTENTS KEY 4		
3	NUMBER OF SECONDS OF PROCESS START	
1	TERM OF PROCESS REPETITION (SECONDS)	
10	NUMBER OF REPETITIONS	
3	BLUR RECTANGLE SIZE	
100	SOURCE X COORDINATE Xso	STEP 9
100	SOURCE Y COORDINATE Yso	
64	SOURCE RECTANGLE WIDTH IN PIXELS DX	
64	SOURCE RECTANGLE HEIGHT IN PIXELS DY	
530	DESTINATION X COORDINATE Xdo	
540	DESTINATION Y COORDINATE Ydo	
64	DESTINATION RECTANGLE WIDTH IN PIXELS DXd	
64	DESTINATION RECTANGLE HEIGHT IN PIXELS DYd	
/BLUR	IMAGE BLUR PROCESS ENDING DELIMITER	
CAOS	CHAOS PROCESS STARTING DELIMITER	
2	ID OF IMAGE DATA TO BE DRAWN	
CONTENTS KEY 3		
0	SOURCE X COORDINATE Xso	
0	SOURCE Y COORDINATE Yso	
100	SOURCE RECTANGLE WIDTH IN PIXELS DX	
100	SOURCE RECTANGLE HEIGHT IN PIXELS DY	
120	DESTINATION X COORDINATE Xdo	STEP 10
150	DESTINATION Y COORDINATE Ydo	
100	DESTINATION RECTANGLE WIDTH IN PIXELS DXd	
100	DESTINATION RECTANGLE HEIGHT IN PIXELS DYd	
10	NUMBER OF REPETITIONS	
0.8	INITIAL VALUE A	
3.8	PROCESS PARAMETER P	
/CAOS	CHAOS PROCESS ENDING DELIMITER	
:		
/PAGE	PAGE ENDING DELIMITER	
PAGE		
:		
/PAGE		

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FIG.19

PROCESS ID	MAGNIFICATION PROCESS	SHRINK PROCESS	RECUDING NUMBER OF COLORS
1	EDGE ENHANCEMENT AFTER BI-LINEAR INTERPOLATION	SIMPLE SHRINK	BIT SLICE
2	SIMPLE MAGNIFICATION	SIMPLE SHRINK	ERROR DIFFUSION
3	BI-LINEAR INTERPOLATION	BI-LINEAR INTERPOLATION	BIT SLICE

FIG.20

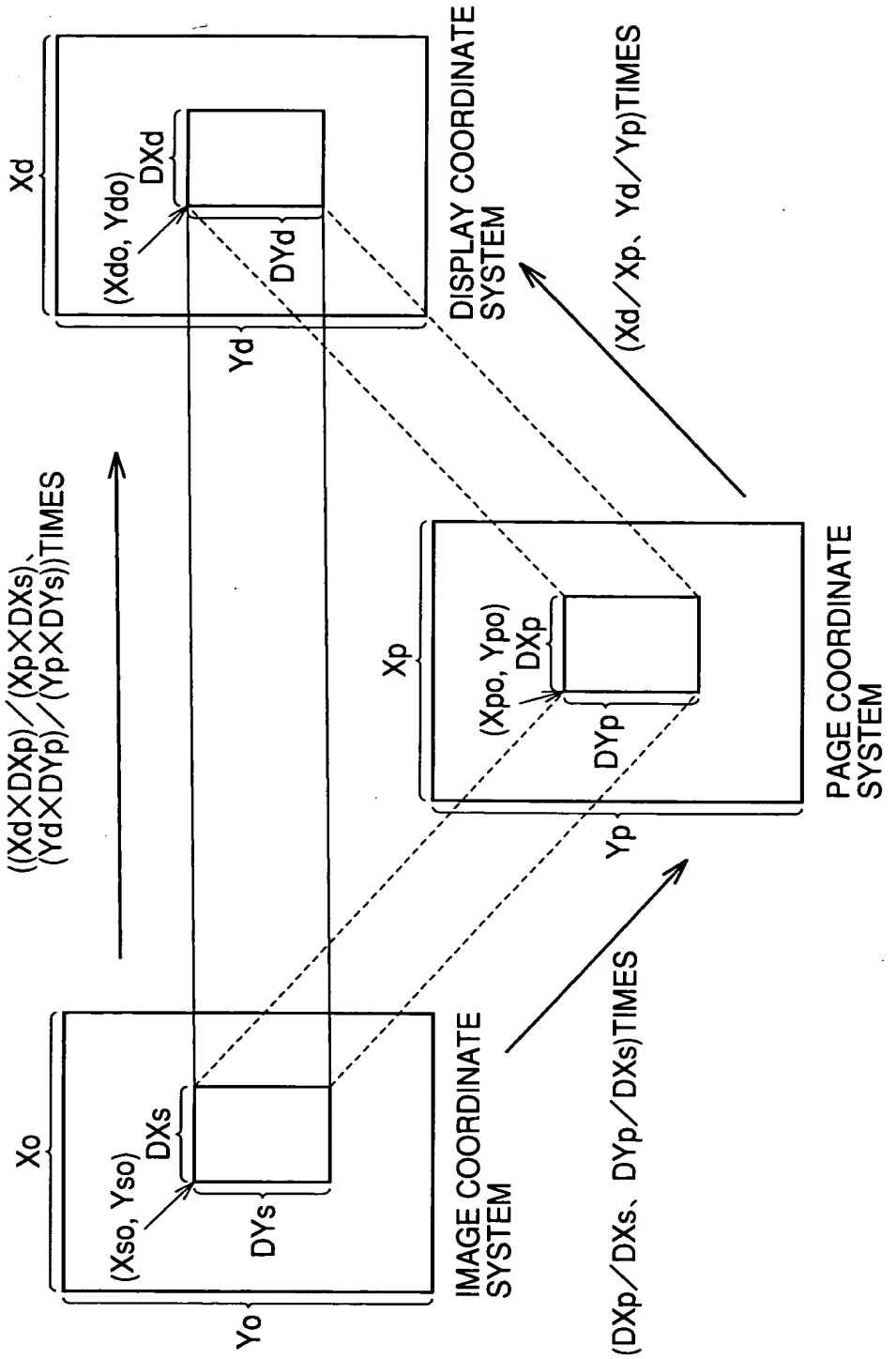

Xd
(Xdo, Ydo)
DXd
DYd
Yd
DISPLAY COORDINATE SYSTEM
((XdXDXp)/(XpXDXs),
(YdXDYp)/(YpXDYs))TIMES
(Xd/Xp、Yd/Yp)TIMES
Xp
(Xpo, Ypo)
DXp
DYp
Yp
PAGE COORDINATE SYSTEM
Xo
(Xso, Yso)
DXs
DYs
Yo
IMAGE COORDINATE SYSTEM
(DXp/DXs、DYp/DXs)TIMES

FIG.21

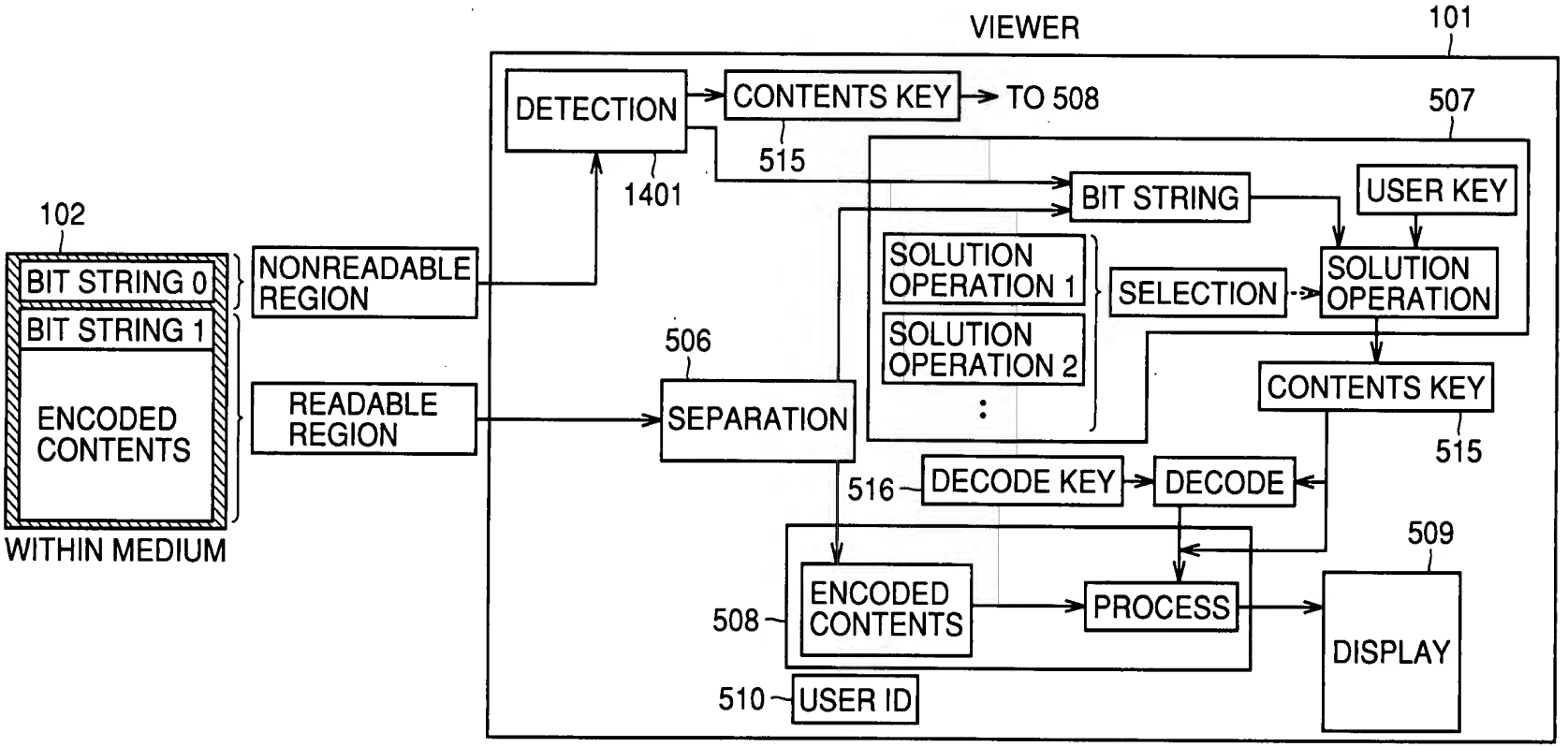

VIEWER
101
DETECTION
CONTENTS KEY
TO 508
507
515
1401
BIT STRING
USER KEY
102
BIT STRING 0
NONREADABLE REGION
SOLUTION OPERATION 1
SELECTION
SOLUTION OPERATION
BIT STRING 1
SOLUTION OPERATION 2
506
CONTENTS KEY
ENCODED CONTENTS
READABLE REGION
SEPARATION
515
516
DECODE KEY
DECODE
509
ENCODED CONTENTS
PROCESS
508
DISPLAY
510
USER ID
WITHIN MEDIUM

FIG.22A

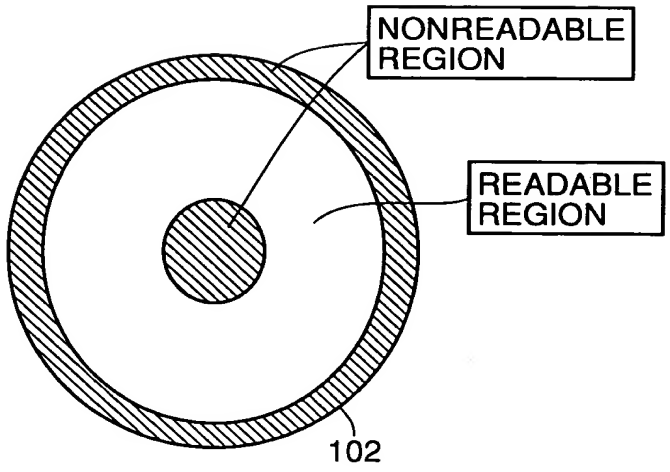


FIG.22B

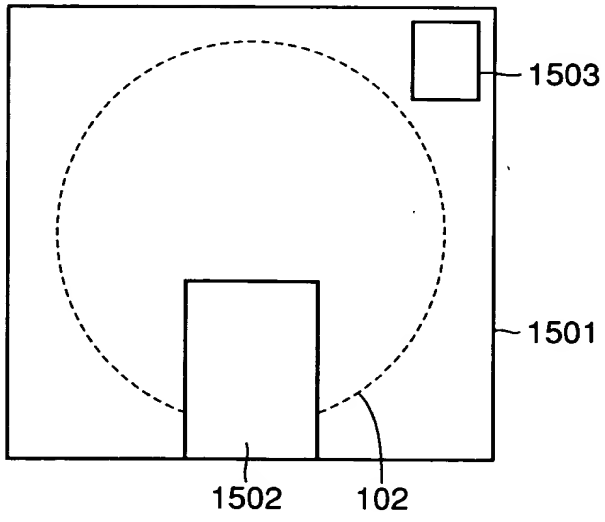


FIG.23

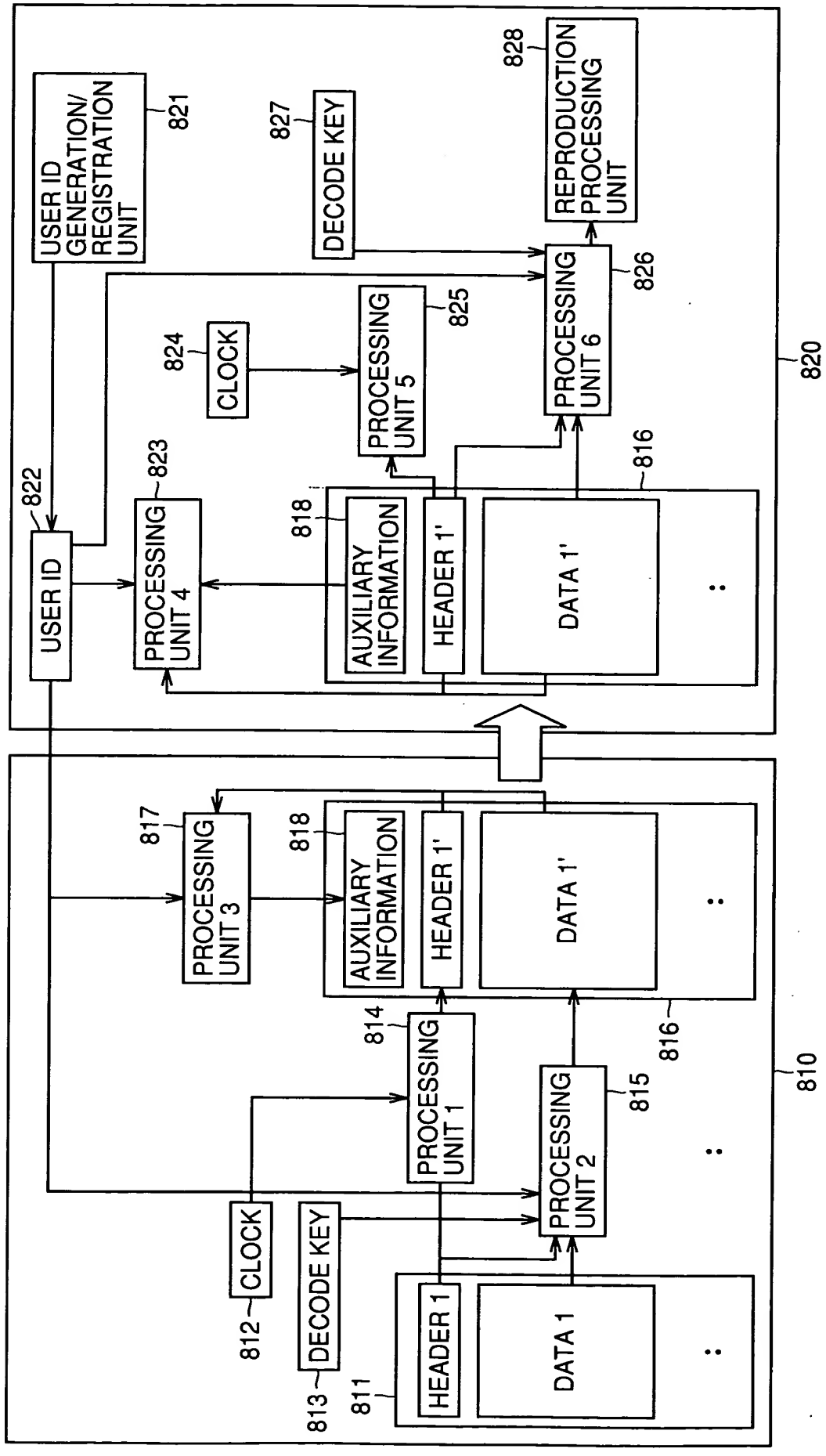
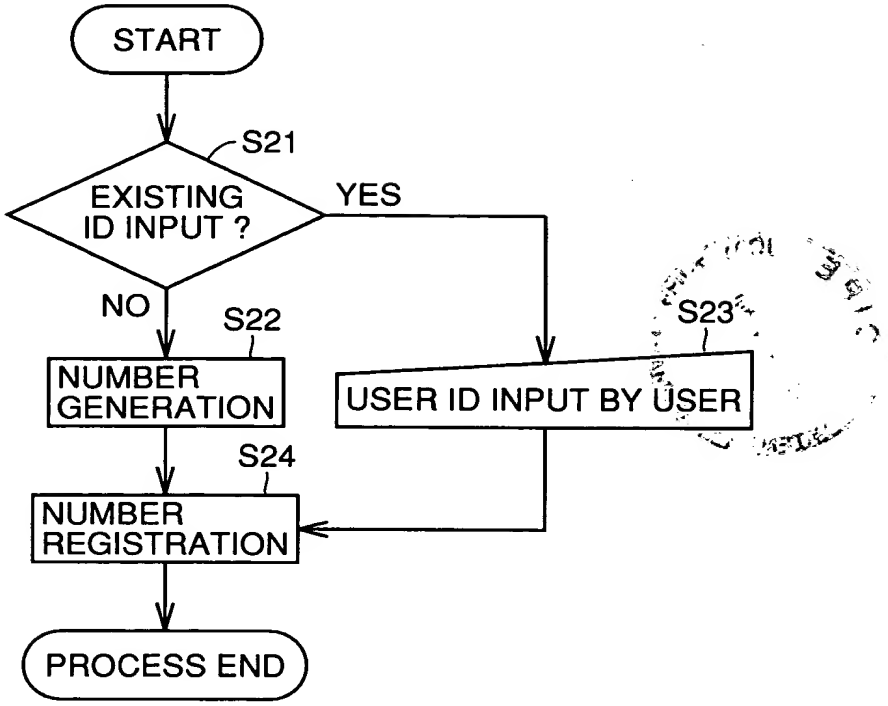

USER ID GENERATION/ REGISTRATION UNIT
821
DECODE KEY
827
REPRODUCTION PROCESSING UNIT
828
820
CLOCK
824
PROCESSING UNIT 5
825
PROCESSING UNIT 6
826
USER ID
822
PROCESSING UNIT 4
823
AUXILIARY INFORMATION
818
HEADER 1'
DATA 1'
816
PROCESSING UNIT 3
817
PROCESSING UNIT 1
814
PROCESSING UNIT 2
815
810
CLOCK
812
DECODE KEY
813
HEADER 1
DATA 1
811

FIG.24


START
S21
EXISTING ID INPUT ?
YES
NO
S22
NUMBER GENERATION
S23
USER ID INPUT BY USER
S24
NUMBER REGISTRATION
PROCESS END